

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claim 2, 7-9, 16, 17 and 19-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Simon et al. (US 6,300,413) in view of Hiratsuka et al. (US 5,019,347).
2. Regarding claim 17, applicants claim method of coating and/or laminating a multilayer adhesive structure with 1) upper and lower dots based on an amine-terminated crosslinkable copolyamide, 2) a crosslinker and 3) an acrylic and/or polyurethane dispersion. Simon et al. disclose a crosslinkable hot melt composition applied according to the double dot technique wherein 1) the upper and lower dots comprise amine-terminated copolyamide (column 1 line 10), 2) a crosslinker (column 2 line 42), and 3) acrylic and polyurethane dispersions (column 1 line 56-57). Simon et al. disclose the use of their invention as coating and/or lamination of sheet-like structures (column 2 lines 27-29). The Example in Simon et al. is an interlining material composed of a corresponding adhesive (column 4 line 9). Simon et al teach that the parting layer between upper dot and base dot, which hitherto has been the weak point of the system, especially in the course of laundering, is more resistant to hydrolytic attack than prior systems and, therefore, exhibits considerably higher stability (column 4 lines 49-53).

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3. Regarding claim 2, applicants claim the copolyamide with a melting range of 90°C to 150°C and a solution viscosity between 1.2 and 1.7. Simon et al. disclose identical ranges for these properties (column 3 lines 25-30).
4. Regarding claims 6 and 7, applicants claim a crosslinker that is an isocyanate that has more reactive groups per molecule and a melting range from 100°C and 130°C. Simon et al. disclose crosslinkers that are solid isocyanates with more than two free NCO groups and a melting range of 100-130°C (column 3 lines 3-5).
5. Regarding claim 8, applicants claim a crosslinker that is an epoxide having a melting range from 90 to 130°C, a molecular weight range from 2000 to 6000 and more than two epoxide groups per molecule. Simon et al disclose crosslinking components that are epoxides having a melting range from 90-130°C, a molecular weight range from 2000-6000, and more than two epoxide groups per molecule (column 3 lines 6-11).
6. Regarding claim 9, applicants claim a crosslinker that is a pulverulent free or blocked isocyanate. Simon et al. disclose a trimerized diisocyanate which has been passivated and processed as an aqueous paste (column 2 lines 44-48). A passivated isocyanate reads on a blocked isocyanate.
7. Regarding claim 16, applicants claim the multilayer adhesive structure wherein the copolyamides are based on lactames (LL, CL), dimer fatty acids and corresponding dicarboxylic acids and diamines having chain lengths of C2 to C15 and piperazine. Simon et al. disclose the use of VESTAMELT X 1027-P1 as the copolyamide (column 3 line 53). VESTAMELT X 1027-P1 is the copolyamide used in the Example of the present specification and described as meeting all of the limitations of claim 16.

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8. Regarding claim 19, Simon et al teach that the parting layer between upper dot and base dot, which hitherto has been the weak point of the system, especially in the course of laundering, is more resistant to hydrolytic attack than prior systems and, therefore, exhibits considerably higher stability (column 4 lines 49-53).

9. Regarding claim 20, Simon et al teach that the advantage of the new technology is that the lower dot is crosslinked even under the drying conditions (column 4 lines 38-39).

10. Regarding claim 21, Simon et al teach that owing to its amine termination, the upper dot is crosslinked with the lower dot during melting, so giving an optimum attachment (column 4 lines 39-42).

11. Regarding claim 22, Simon et al teach that there is a sharp increase in the molecular weight of the lower dot following coating and it is no longer able to sink into the knit (column 4 lines 42-44).

12. Regarding claim 23, Simon et al teach that in the course of subsequent bonding, the low-viscosity polyamide of the upper dot is compelled to flow against the upper material that is to be bonded, since it is unable to flow off downward, hence giving very high adhesions even with very small amounts of hotmelt adhesive (column 4 lines 44-49).

13. Applicants claim the application of the lower dot in a halftone formation as a paste.

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14. Simon et al. disclose application of a lower dot as a paste comprising a passivated isocyanate (column 2, lines 44-48) but fail to disclose application of the lower dot in halftone formation.

15. Hiratsuka et al. teach application of an multilayer adhesive coating applied to a sheet-like structure in a formation of dots distributed microscopically at random and of varying size and shape but appear essentially uniformly in total (Column 4, lines 18-21). Examiner takes the position that any non uniform distribution of dots that appears essentially uniform in total is considered the halftone method. Hiratsuka et al. teach that the adhesive area ratio can be adjusted (column 4, lines 28-34) and henceforth optimized to the thickness of the substrate by adjusting the size and width of the dots (column 4, lines 38-41).

16. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the halftone method with the multilayer adhesive structure of claim 1 because Simon et al. teach that it is within the skill of the art to form a double dot adhesive wherein the lower dot is applied as a paste and Hiratsuka et al teach it is within the skill of the art to apply an adhesive in the double dot method. One would have applied the lower dot in a halftone method in order to have controlled the amount of adhesive applied and receive the expected benefit of low waste application with variable adhesion and texture of the final interlining. Absent any evidence to the contrary, there would have been reasonable expectation of success of optimizing the adhesive area ratio to the thickness of the sheet-like structure to which the adhesive is applied.

17. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Simon et al. (US 6,300,413) in view of Hiratsuka et al. (US 5,019,347) with evidence provided DEGUSSA High Performance Polymers with further evidence provided by DEGUSSA VESTAMELT X1027 Properties.

18. Applicants claim upper and lower dots wherein the copolyamides have different melting temperatures or viscosities. In the Example, Simon et al. disclose a double dot adhesive structure wherein the upper dot is a VESTAMELT X1027-P816 powder and the lower dot has VESTAMELT X 1027-P1 crosslinked with VESTANAT T 1890 and mixed with lower melting point VESTOPLAST 408 and with the thickeners MIROX TX and INSTRASOL.

19. DEGUSSA High performance polymers discloses that the difference between VESTAMELT X1027-P1 and VESTAMELT X1027-P816 is the particle size (notes under Tables page 3).

20. DEGUSSA VESTAMELT X1027 Properties discloses that all VESTAMELT X1027 polymers have the same melting point (Table row 3) and viscosity (Table row 2). Since the Example in Simon et al. discloses a upper dot and lower dot comprising the same basic polymer with the same melting point and viscosity except the lower dot is crosslinked with other polymers and thickeners, the hotmelt adhesive structure necessarily has an upper and lower dot with polyamides having different melting points and viscosities.

21. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Simon et al. (US 6,300,413 B1) in view of Hiratsuka et al. (US 5,019,347) and further in view of Kohlhammer et al. (US 5,977,244).

22. Regarding claim 11, applicants claim the use of epichlorohydrin as the crosslinker. Simon et al., discussed above, do not teach the use of epichlorohydrin as a crosslinker. Simon et al. do however teach that bisphenol A is a suitable crosslinker (column 3 lines 10-11)

23. Kohlhammer et al. disclose typical epoxide crosslinkers for textiles of acrylic copolymers (column 2 lines 13-16) are epichlorohydrin and bisphenol A (column 3, lines 47-50). Kohlhammer et al. henceforth teach that epichlorohydrin and bisphenol A are functional equivalents for the purpose of crosslinking acrylic polymers. When the prior art recognizes two compounds as functional equivalent for the same purpose, it is *prima facie* obvious to substitute one compound for the other. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have used epichlorohydrin as a crosslinker in the hotmelt adhesive structure of Simon et al.

24. Additionally, selection of a known material based on its suitability for its intended use is *prima facie* obvious, see *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945). It would have been obvious to one having ordinary skill in the art at the time the invention was made to have crosslinked a lower dot of a double dot interlining with epichlorohydrin because Simon et al. teach that is within the skill of

the art to crosslink the lower dot of a double dot structure and Kohlhammer et al. teach that textiles of acrylic copolymers may be crosslinked with epichlorohydrin.

25. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Simon et al. (US 6,300,413 B1) in view of Hiratsuka et al. (US 5,019,347) and further in view of Hahnle et al. (US 6,455,600 B1).

26. Simon et al. do not disclose the acrylic component as a di- and/or triacrylate. Simon et al. do disclose the acrylic component as MIROX TX which is a polyacrylic acid derivative (column 4 line 3) and is used as a thickener (column 3 lines 56-58).

27. Hahnle et al. disclose water-swellable or water-soluble synthetic polymers as thickeners and gives examples of such thickeners as homopolymers of (meth)acrylic acid or copolymers of (meth)acrylic acid and a compound which contains at least 2 ethylenic double bonds such as butanediol diacrylate (column 10 lines 47-55). Hahnle et al., henceforth, teach that polymers of acrylic acid and polymers of diacrylates are functional equivalents for purpose of polymer thickeners. When the prior art recognizes two compounds as functional equivalent for the same purpose, it is *prima facie* obvious to substitute one compound for the other. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have used a diacrylate polymer as a thickener in the hotmelt adhesive structure of Simon et al.

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28. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Simon et al. (US 6,300,413) in view of Hiratsuka et al. (US 5,019,347) with evidence provided by Mattor et al. (US 4,282,054).

29. Applicants claim the use of the lower dot of the multilayer adhesive structure as a strikethrough barrier. This is an intended use limitation. The recitation of an intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentable distinguish the claimed invention for the prior art. If the prior art structure is capable or performing the intended use, then it meets the claim.

30. Simon et al. do not explicitly disclose that the lower dot is used as a strikethrough barrier. Simon et al. do teach however that the lower dot is crosslinkable (abstract).

31. Mattor et al. teach that crosslinkable resins can be used as a strikethrough barrier on a sheet-like structure (column 1, liners 53-58). Since the lower dot of Simon et al. is crosslinkable, it may be used as a strikethrough barrier.

32. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Simon et al. (US 6,300,413 B1) in view of Kohlhammer et al. (US 5,977,244) and in further view of Dobson et al. (US 5,242,877).

33. Applicant claims the multilayer adhesive structure wherein the crosslinking reaction is accelerated by catalysis. Simon et al., discussed above, do not teach the acceleration of crosslinking with accelerating catalysts.

34. Kohlhammer et al. disclose crosslinking catalysts for the textile binder composition (column 3, lines 58-60).

35. Dobson et al. teach that catalysts speed up (accelerate) a reaction by lowering the activation energy (column 1 lines 27-29). Accelerating a reaction reduces reaction time and lowering the activation energy reduces energy input, both of which reduce production costs.

36. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have accelerated the crosslinking in a lower dot of a double dot interlining because Simon et al. teach that it is within the skill of the art to crosslink the lower dot of a double dot interlining and Kohlhammer et al. teach that it is within the skill of the art to use crosslinking catalysts for textile binders. One would have been motivated to do this because Dobson et al. teach that accelerating chemical reactions reduces the reaction time and energy input henceforth reduces cost. Absent any evidence to the contrary, there would have been a reasonable expectation of success in accelerating the crosslinking reaction of Simon et al. with crosslinking catalysts.

Response to Arguments

37. Applicant's arguments filed 12/22/2009 have been fully considered but they are not persuasive.

38. Applicants argue that the claimed invention differs from Simon et al because the structure of the present invention has a feature that the reactive components present in the melt-adhesive structure react with crosslinking only in the melt. Applicants also

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argue that the activation temperature is lower than in previous systems and the structure has a good water resistance. These arguments are not convincing. These arguments have been presented in previous submissions to the office and were addressed in the previous non-final rejection. Examiners arguments are reiterated below.

39. These arguments are not persuasive because:

- a. Simon et al. disclose that crosslinking occurs in the lower dot during drying and the upper dot during melting (column 4 lines 38-42). Drying occurs at 130°C (column 3 lines 64-66) and joining temperature occurs at 127°C (column 4 lines 9-11). All the starting materials melt at or below 120°C (column 55-64). There is no evidence that reaction occurs before melt in Simon et al.
- b. As discussed in a), the activation temperature is at most 127°C. The activation temperature discussed in Applicant's specification is in a range from about 100 to 130°C (see page 3 lines 24-28). The activation temperature of Simon et al. appears to be the same as Applicant's activation temperature.
- c. The base dot of Simon et al is dispersed in water (column 4 line 2) and the double dot structure is resistant to hydrolytic attack (column 4 lines 49-52) and henceforth the structure of Simon et al. has good water resistance.

40. Applicant's arguments filed 12/22/2009 have been fully considered but they are not persuasive. Applicants argue that Hiratsuka et al disclose test strips that are used for blood examinations in large amounts which are not manufactured by machines.

Applicants argue that the present invention is used in the garment industry and are manufacture by machine and must use small amounts of adhesive. This argument is not convincing. Applicants are arguing that if all of the features of Hiratsuka et al were incorporated, the result would not be suitable for the present invention. The test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981).

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MIKE DOLLINGER whose telephone number is (571)270-5464. The examiner can normally be reached on M-F 9-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski can be reached on 571-272-1302. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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/mmd/

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